

Sea Grant and Water Resources

Sea Grant and Water Resources

V(A). Planned Program (Summary)

1. Name of the Planned Program

Sea Grant and Water Resources

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
112	Watershed Protection and Management	10%			
131	Alternative Uses of Land	20%			
133	Pollution Prevention and Mitigation	30%			
135	Aquatic and Terrestrial Wildlife	25%			
307	Animal Management Systems	5%			
903	Communication, Education, and Information Delivery	10%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	9.5	0.0	0.0	0.0
Actual	7.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c 112890	1890 Extension	Hatch	Evans-Allen
	0	0	0
1862 Matching 112890	1890 Matching	1862 Matching	1890 Matching
	0	0	0
1862 All Other 2843111	1890 All Other	1862 All Other	1890 All Other
	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Provide educational workshops on the following:

- Economic benefits of fish handling strategies aimed at enhancing product freshness and shelf-life
- Mobil fishing gear and methods to reduce sea-bed impact in the fishing industry
- Blue mussel aquaculture technology

Assist fishermen with cooperative research projects as necessary -Act as a "match maker" to identify potential partners among commercial fishermen and researchers and assist fishermen in developing research ideas that can be incorporated into joint fishermen/scientist proposals

Conduct dockside or on-water demonstrations of innovative gear technologies and of low impact mobile fishing gear innovations

Provide outreach on Open Ocean Aquaculture, targeting commercial fishermen, decision makers, media, potential investors, and interested parties

- Help interested individuals and companies obtain aquaculture permits in NH waters and federal waters
- Help individuals and companies develop business plans for starting and expanding mussel farms
- Use the UNH Open Ocean Aquaculture project to improve the mussel aquaculture process, trying new equipment, as well as growout and harvesting techniques
- Help mussel growers expand marketing opportunities, including value added products
- Work with mussel growers, helping them create sustainable and profitable businesses

Provide focused training and long-term assistance to communities on natural resource planning and land conservation

Provide direct assistance to towns and conservation groups upon request

Conduct land conservation and natural resources workshops and other educational activities as suggested by program staff and as requested by communities and conservation groups

Provide guidance to UNH Senior Project Teams assisting communities with natural resource conservation projects

Plan and conduct the Saving Special Places Conference

Conduct the Natural Resources Outreach Coalition program for communities selected annually

Produce printed, presentation, web and other educational materials

Promote and deliver the Dollars and Sense of Saving Special Places program

Provide education program to NH Realtors about natural resource contributions to property values

Conduct workshops for garden clubs, community groups, watershed associations and others interested in sustainable landscaping practices and water resources protection - workshops will include a presentation and when possible, a practical assessment of the property where the workshop is held

Conduct activity-based Great Bay Discovery Cruise to provide citizens with the opportunity to learn about the estuary aboard the University's research vessel

Continue to write scripts, record and monitor a low power radio station (Great Bay Area Radio) dedicated to informing the 30,000 motorists passing by the Estuary daily. Scripts focus on natural history, research, educational opportunities and Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET). Share CICEET derived research and resources relevant to coastal communities

Work with the Natural Resource Outreach Coalition (NROC) to recruit communities and develop marketing materials

Develop, enhance and deliver presentations (including GIS-based) about land use/water quality to local decision makers

Facilitate community meetings to develop action plans for implementing water and natural resource based planning

Review and revise existing programs and curriculum materials to support teaching core science standards through a marine context

Develop new marine education K-12 Sea Trek programs that reflect emerging national scientific issues and address prioritized education standards

Expand our programs and materials that target adult audiences and recruit and train a cadre of Docents specifically for that role

Develop programs focused on high school level teachers and students that provide exposure to marine research and encourage students to pursue marine fields in college and beyond

Develop convenient and effective teacher training in conjunction with all boat-based and field programs utilizing both face-to-face and remote methods

In partnership with schools and UNH, develop new programs that engage in-service and pre-service teachers directly with researchers, faculty, and graduate students

In collaboration with the Leitzel Center, the Education Department, and Marine Program faculty, develop both credit and non-credit marine science programs for middle and high school teachers

Hold water quality monitoring training sessions for new and existing volunteers - conduct field visits for in-depth monitoring and quality assurance

Provide analytical services, data base management and data analysis for Great Bay Coastal Watch and NH Lakes Lay Monitoring Program collected samples

Produce annual lake reports and coastal reports on water quality assessments from volunteer monitoring efforts

Hold regular meetings of the monitors to provide program updates, advanced monitoring technique trainings and data interpretation/presentation skill building. Also conduct needs assessment and evaluation

Provide data and data interpretation as requested by decision-makers, cooperators and watershed stakeholder groups

2. Brief description of the target audience

Commercial fishermen and related industries; land owners and recreational users of New Hampshire's lakes, estuaries, rivers, and ocean beaches; Formal and non-formal educators and K-12 students; policy and decision makers

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	2000	210000	0	0
2007	1781	21000	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year Target

Plan: 0

2007: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	5	0	0

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

Number of fishermen attending workshops on the economic benefits of fish handling strategies aimed at enhancing product freshness and shelf-life

Year	Target	Actual
2007	30	90

Output #2**Output Measure**

Number of fishermen attending workshops on focusing reducing sea-bed impacts by mobile fishing gear.

Year	Target	Actual
2007	30	90

Output #3**Output Measure**

Number of fishermen who participate in cooperative research proposals submitted to appropriate programs or agencies

Year	Target	Actual
2007	40	39

Output #4**Output Measure**

Number of individuals who attend training sessions designed to transfer blue mussel aquaculture technology from the research phase to commercial phase

Year	Target	Actual
2007	30	20

Output #5**Output Measure**

Number of interested individuals and companies helped to obtain aquaculture permits in NH waters and federal waters

Year	Target	Actual
2007	5	1

Output #6**Output Measure**

Number of individuals and companies helped to develop business plans for starting and expanding mussel farms

Year	Target	Actual
2007	5	2

Output #7**Output Measure**

Number of mussel growers helped to create sustainable and profitable businesses.

Year	Target	Actual
2007	5	1

Output #8**Output Measure**

Number of UNH Senior Project Teams provided with guidance in assisting communities with natural resource conservation projects

Year	Target	Actual
2007	8	12

Output #9**Output Measure**

Number of people reached through the Dollars and Sense of Saving Special Places program

Year	Target	Actual
2007	100	250

Output #10**Output Measure**

Number of activity-based Great Bay Discovery Cruises provided to citizens with the opportunity to learn about the estuary aboard the University's research vessel

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Year	Target	Actual
2007	8	5

Output #11

Output Measure

Number of motorists passing by the Great Bay estuary exposed to a low power radio station (Great Bay Area Radio) dedicated to informing them with recorded messages on natural history, research, educational opportunities and Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET)

Year	Target	Actual
2007	30000	30000

Output #12

Output Measure

Number of water quality monitoring training sessions held for new and existing volunteers

Year	Target	Actual
2007	3	1

Output #13

Output Measure

Number of field visits made for in-depth monitoring and quality assurance

Year	Target	Actual
2007	20	10

Output #14

Output Measure

Number of annual lake reports and coastal reports published on water quality assessments from volunteer monitoring efforts

Year	Target	Actual
2007	30	13

Output #15

Output Measure

Number of new volunteers trained in proper water quality sampling methods and who participate in seasonal sampling as part of the Great Bay Coastal Watch or Lakes Lay Monitoring Program

Year	Target	Actual
2007	50	9

Output #16

Output Measure

Number of NH Lakes Lay Monitoring Program and Great Bay Coastal Watch volunteers who contribute hours toward conducting water quality monitoring and analysis activities in their local watersheds

Year	Target	Actual
2007	500	500

Output #17

Output Measure

Number of informational workshops and/or presentations aimed at facilitating partnerships between fishermen and scientists

Year	Target	Actual
2007	5	5

Output #18

Output Measure

Number of articles published detailing the results of cooperative research and their benefit to the fishing industry

Year	Target	Actual
2007	4	5

Output #19

Output Measure

Number of dockside and/or at-sea vessel demonstrations of enhanced fish handling strategies

Year	Target	Actual
2007	2	1

Output #20

Output Measure

Number of information sheets, technical reviews, and web pages authored which detail fish handling strategies and enhance economic value and shelf-life

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Year	Target	Actual
2007	2	9

Output #21

Output Measure

Number of commercial fishermen, decision makers, media, potential investors, and interested parties reached through programs on Open Ocean Aquaculture

Year	Target	Actual
2007	50	20

Output #22

Output Measure

Number of towns and conservation groups provided with direct assistance regarding land and water conservation

Year	Target	Actual
2007	20	38

Output #23

Output Measure

Number of education programs provided to NH Realtors about natural resource contributions to property values

Year	Target	Actual
2007	2	0

Output #24

Output Measure

Number of meetings and other events where Wildlife Action Plan information is presented

Year	Target	Actual
2007	5	12

Output #25

Output Measure

Number of partners involved in determining actions to provide research-based information to help landowners and producers adopt sustainable practices

Year	Target	Actual
2007	5	0

Output #26

Output Measure

Number of workshops conducted for garden clubs, community groups, watershed associations and others interested in sustainable landscaping practices and water resources protection

Year	Target	Actual
2007	2	2

Output #27

Output Measure

Number of presentations (including GIS-based) developed, enhanced and delivered about land use/water quality to local decision makers

Year	Target	Actual
2007	15	38

Output #28

Output Measure

Number of community meetings facilitated to develop action plans for implementing water and natural resource based planning

Year	Target	Actual
2007	10	38

Output #29

Output Measure

Number of workshops delivered as educational follow-up related to community action plans

Year	Target	Actual
2007	10	38

Output #30

Output Measure

Number of invasive species identification trainings and monitoring programs delivered for recreational divers

Year	Target	Actual
2007	2	4

Output #31**Output Measure**

Number of new marine education K-12 Sea Trek programs that reflect emerging national scientific issues and address prioritized education standards

Year	Target	Actual
2007	3	11

Output #32**Output Measure**

Number of marine science education programs focused on high school level teachers and students that provide exposure to marine research and encourage students to pursue marine fields in college and beyond

Year	Target	Actual
2007	12	5

Output #33**Output Measure**

Number of home-school and other under-represented people reached through Marine Docent and the Great Bay Coast Watch programs.

Year	Target	Actual
2007	8	20

Output #34**Output Measure**

Number of teachers assisted in measuring the improvement in student performance as a result of participation in programs

Year	Target	Actual
2007	5	0

Output #35**Output Measure**

Number of guides developed to existing curricular and program materials that identify how the marine context can be used to address core content standards

Year	Target	Actual
2007	2	7

Output #36**Output Measure**

Number of convenient and effective teacher training programs held in conjunction with all boat-based and field programs utilizing both face-to-face and remote methods

Year	Target	Actual
2007	2	4

Output #37**Output Measure**

Number of new programs developed in partnership with schools and UNH, that engage in-service and pre-service teachers directly with researchers, faculty, and graduate students

Year	Target	Actual
2007	1	0

Output #38**Output Measure**

Number of credit and non-credit marine science programs developed in collaboration with the UNH Leitzel Center, the Education Department, and Marine Program faculty for middle and high school teachers

Year	Target	Actual
2007	1	0

Output #39**Output Measure**

Number of workshop trainings conducted at regional and national conferences

Year	Target	Actual
2007	3	4

Output #40**Output Measure**

Number of NROC communities provided with water resource/water quality related technical assistance

Year	Target	Actual
2007	4	3

V(G). State Defined Outcomes

O No.	Outcome Name
1	Number of coastal watershed residents who report a greater willingness to participate in additional educational and/or stewardship events about the Great Bay Estuary
2	Number of coastal community members who report an increase in knowledge about growth and its effects on habitat, water quality, and water quantity
3	Number of community members, including divers, seafood handlers, and baitfish dealers who report an increase in knowledge and understanding of marine invasions and impacts on the ecosystem as well as an increase in knowledge of how they can minimize introductions from their activities
4	Number of adults and children with a measurable increase in their marine science literacy through specialist and volunteer delivered outcome-based, formal and informal education programs
5	Number of teachers who learn to utilize marine science concepts and contexts to support teaching core science and other content standards in their classrooms
6	Number of marine docents, educators, students, and the general public who gain knowledge of a web-based site containing marine science educational activities, programs, images and research results
7	Number of new aquaculture businesses started growing blue mussels on long lines in the open ocean
8	Dollars generated the blue mussel aquaculture industry
9	Number of fishermen who choose non-mandatory conservation-minded gear over traditional equipment
10	Number of cooperative research proposals submitted involving scientists and fishermen that focus on reducing benthic impacts of mobile fishing gear are submitted to appropriate programs/agencies
11	Number of fishermen who choose soft-bottom fishing gear over traditional equipment
12	Amount (\$) fishermen will receive in competitive funding for cooperative research
13	Number of fishermen who successfully complete cooperative research projects
14	Number of bank loans made to individuals seeking to enter the aquaculture industry
15	Percent of clientele who report increased conservation activity as a result of UNHCE programming
16	Number of towns and conservation groups receiving direct assistance with and that conduct natural resource planning and conservation
17	Number of municipal officials and others from twenty communities who apply information presented at Dollars and Sense programs to local land use decision-making and public policy development
18	Number of municipalities that take action to raise funds for land/water conservation after participating in UNHCE programs
19	Number of community decision-makers and Coverts Cooperators who identify actions they will take to conserve the state's biodiversity
20	Number of communities that develop action plans that include a variety of approaches for making progress in community based natural resource protection projects
21	Number of communities seeking technical or financial assistance from program partners in order to implement natural resource protection projects. Assistance might include help with developing plans, conducting outreach or reviewing regulations
22	Number of divers, seafood handlers, and baitfish dealers who adopt practices that prevent accidental introduction of invasive species
23	Number of K-12 teachers who adopt marine science concepts and contexts learned through Sea Grant /UNHCE programs that support teaching of core sciences and other content standards
24	Number of K-12 students who improve performance in content areas as a result of teachers incorporating marine science into their lesson plans
25	Based on data generated by the Great Bay Coastal Watch and the Lakes Lay Monitoring Program, number of pollution problem areas that are addressed by lake associations or regulatory agencies
26	Percent of active NH Lakes Lay Monitoring Program monitors who report that program results were presented to their communities and/or associations through newsletter/newspaper articles, formal and informal presentations, data summaries and report distributions
27	Percent of new or existing volunteer monitoring programs that request assistance and then initiate enhanced or expanded program efforts due to assistance provided by the project
28	Number of fishermen who gain knowledge about the economic benefits of fish handling strategies aimed at enhancing product freshness and shelf-life
29	Number of individuals who attend training sessions designed to transfer blue mussel aquaculture technology for the research phase and indicate an increased understanding of the concepts
30	Number of community leaders, volunteers and others who increase their knowledge about natural resources and land conservation topics by attending workshops
31	Number of municipal officials and others who increase their knowledge about the economics of open space, and the financial alternatives available to conserve open space by attending UNHCE Dollars and Sense workshops

32	<p>Number of community members, including divers, seafood handlers, and baitfish dealers who report an increase in knowledge and understanding of marine invasions and impacts on the ecosystem as well as an increase in knowledge of how they can minimize introductions from their activities Number of adults and children with a measurable increase in their marine science literacy through specialist and volunteer delivered outcome-based, formal and informal education programs Number of teachers who learn to utilize marine science concepts and contexts to support teaching core science and other content standards in their classrooms Number of marine docents, educators, students, and the general public who gain knowledge of a web-based site containing marine science educational activities, programs, images and research results Number of divers, seafood handlers, and baitfish dealers who adopt practices that prevent accidental introduction of invasive species Number of K-12 teachers who adopt marine science concepts and contexts learned through Sea Grant /UNHCE programs that support teaching of core sciences and other content standards Number of K-12 students who improve performance in content areas as a result of teachers incorporating marine science into their lesson plans</p>
33	<p>Based on data generated by the Great Bay Coastal Watch and the Lakes Lay Monitoring Program, number of pollution problem areas that are addressed by lake associations or regulatory agencies Percent of active NH Lakes Lay Monitoring Program monitors who report that program results were presented to their communities and/or associations through newsletter/newspaper articles, formal and informal presentations, data summaries and report distributions Percent of active NH Lakes Lay Monitoring Program monitors who report that program results were presented to their communities and/or associations through newsletter/newspaper articles, formal and informal presentations, data summaries and report distributions</p>
34	<p>Number of fishermen who gain knowledge about the economic benefits of fish handling strategies aimed at enhancing product freshness and shelf-life Number of fishermen who choose non-mandatory conservation-minded gear over traditional equipment Number of cooperative research proposals submitted involving scientists and fishermen that focus on reducing benthic impacts of mobile fishing gear are submitted to appropriate programs/agencies Number of fishermen who choose soft-bottom fishing gear over traditional equipment Number of fishermen who successfully complete cooperative research projects</p>
35	<p>Coastal ecosystems are ecologically and economically valuable environments that are subject to multi-use demands ranging from food production and the purification of societies' wastes, to flood control, transportation and recreation. These systems provide essential habitat for fish and shellfish that constitute 75% of commercial landings in the United States and provide essential 'ecosystem services' valued in the trillions of dollars annually on a global scale. At the same time, these systems have become increasingly threatened by human-induced perturbations. These include non-point source pollution, invasive species, coastal development and habitat alteration. Although New Hampshire is not a particularly populous state (1.3 million residents) and has a relatively short coastline, it in many ways mirrors other coastal states in the pressures of continued population growth and the demographics of that growth. Nearly 75% of New Hampshire residents live within 50 miles of the coast, and the rate of growth in the 'seacoast' region has grown at a rate of 10% over the past decade, a rate nearly double that of the rest of the state. Coastal communities, deeply rooted in the resources of the estuaries and ocean coasts that they inhabit, are struggling with how to manage growth and its associated waste streams. The Great Bay estuary is displaying indicators of nutrient over-enrichment, bacterial contamination and habitat loss, while coastal fishermen are dealing with harmful algal bloom related fisheries closures and the unknown effects of proposed offshore sewage outfalls.</p>
36	<p>Number of individuals who attend training sessions designed to transfer blue mussel aquaculture technology for the research phase and indicate an increased understanding of the concepts Number of new aquaculture businesses started growing blue mussels on long lines in the open ocean Dollars generated the blue mussel aquaculture industry Number of bank loans made to individuals seeking to enter the aquaculture industry</p>

Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)

External factors which affected outcomes

Natural Disasters (drought, weather extremes, etc.)

Economy

Appropriations changes

Public Policy changes

Government Regulations

Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

After Only (post program)

Before-After (before and after program)

During (during program)

Time series (multiple points before and after program)

Evaluation Results

Key Items of Evaluation